

REMARKS

This responds to the Office Action mailed on March 22, 2004.

Claims 2-14, 21-22, 24, 37, 38, 51, 57, 63, 67-76 are amended. Claims 72-76 have been withdrawn. Claims 15-16, 31-32, 47-48, 54, and 60 have previously been withdrawn.

As a result, claims 2-16, 19-32, 35-48, 51-54, 56-60, and 62-76 are now pending. The proposed amendments to the claims are fully supported by the specification as originally filed, and no new matter will be added by entry of the proposed amendment. The amendments are proposed to clarify the claims and are not intended to limit the scope of equivalents to which any claim element may be entitled. Applicants respectfully request reconsideration of the above-identified application in view of the amendments above and the remarks that follow.

Non-elected Claims

Applicants believe that independent claims 6, 10, 22, 38, 51, and 57 are generic. In addition, applicants submit that claims 6, 10, 22, 38, 51, and 57 are patentable, as discussed in more detail below. Further, withdrawn claims 15-16, 31-32, 47-48, 54, 60, and 72-76 each depend from one of the generic, patentable, independent claims. Accordingly, applicants respectfully request that the withdrawn claims be entered and examined. In anticipation of the Examiner entering the withdrawn claims, Applicants have amended some of these claims to put them in condition for allowance.

Objection to the Specification

The specification was objected to as having informalities. The Examiner required that related application information be added to the specification.

The publication information of the related application has previously been updated to respond to the objection.

Applicants respectfully request that the objection to the specification be removed.

Drawing Objections

The drawings were objected to under 37 C.F.R. 1.83(a), with regard to claims 72-76. Claims 72-76 have been withdrawn from consideration.

Applicants respectfully request that the objection to the drawings be removed.

§112 Rejection of the Claims

Claims 13, 29, 45 and 72-76 were rejected under 35 USC § 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which Applicant regards as the invention.

With regard to claims 13, 29, and 45, the Examiner has requested Applicants to show “how the IHS/IS is being electrically connected to the substrate.” Respectfully, the Examiner is referred to paragraph 43 of the specification:

“In addition, or alternatively, the bottom of the extended base of the IHS/IS may have a pinned or otherwise keyed arrangement to facilitate in proper alignment, attachment, or act as attachment points, and also facilitate conductivity. As an alternative to conductivity e.g., being electrically connected, the IHS/IS may also be electrically insulated from the substrate or exposed electrical interconnections...”

Claims 72-76 have been withdrawn from consideration.

Applicants respectfully request that the §112 rejection of these claims be removed.

§102 Rejection of the Claims

Claims 6-14 and 63 were rejected under 35 USC § 102(e) as being allegedly anticipated by Chen (U.S. 6,191,478). Claims 2-5, 6-14 and 63 were rejected under 35 USC § 102(b) as being allegedly anticipated by Dudderar et al. (U.S. 5,767,447).

Applicants do not admit that Chen is prior art and reserve the right to swear behind Chen at a later date. Nevertheless, Applicants respectfully submit that the claims are distinguishable over Chen for the reasons argued below.

Claim 2 recites “A package comprising: one of a thin-core and coreless substrate of an integrated circuit printed circuit board (IC-PCB) carrier package; and an Integrated Heat Spreader / Integrated Stiffener (IHS/IS) mounted to the substrate.....”

Claim 10 recites “An Integrated Heat Spreader / Integrated Stiffener (IHS/IS) mountable to one of a thin-core and coreless substrate...”

Neither Chen nor Dudderar et al. disclose or teach “a thin-core and coreless substrate.”

Accordingly, Applicants submit that claims 2 and 10 are patentably distinguishable from Chen and Duddedar et al.

Because claims 3-5, 6-9, 11-14 and 63 depend from either claims 2 or 10, and contain additional limitations that are patentably distinguishable over Duddedar et al. and Chen, these dependent claims are also considered to be patentable.

§103 Rejection of the Claims

Claims 2-5, 19-30, 35-46, 51-53, 56-59, 62 and 64-76 were rejected under 35 USC §103(a) as being allegedly unpatentable over Chen in view of Greenwood (U.S. 6,338,985). Claims 2-5, 19-30, 35-46, 51-53, 56-59, 62 and 64-76 were also rejected under 35 USC § 103(a) as being allegedly unpatentable over Dudderar et al. in view of Greenwood. These rejections are respectfully traversed.

The Office Action has the burden under 35 U.S.C. § 103 to establish a *prima facie* case of obviousness. *In re Fine*, 837 F.2d 1071, 1074, 5 USPQ2d 1596, 1598 (Fed. Cir. 1988). To do that, the Office Action must show that some objective teaching in the prior art or some knowledge generally available to one of ordinary skill in the art would lead an individual to combine the relevant teaching of the references. *Id.*

In order for the Office Action to establish a *prima facie* case of obviousness, there must be some suggestion or motivation to modify the reference or to combine reference teachings. The teaching or suggestion to make the claimed combination and the reasonable expectation of success must both be found in the prior art, not in applicant's disclosure, nor from impermissible hindsight. MPEP § 2143 and M.P.E.P. § 2142 (citing *In re Vaeck*, 947 F.2d 488, 20 USPQ2d 1438 (Fed.Cir. 1991)).

Applicants respectfully submit that the Office Action did not make out a *prima facie* case of obviousness, because it provides no evidence of a suggestion to combine the cited references. Such a suggestion to combine must come from the prior art and not from Applicants' specification nor from impermissible hindsight.

Claim 2 recites “A package comprising: one of a thin-core and coreless substrate of an integrated circuit printed circuit board (IC-PCB) carrier package; and an Integrated Heat Spreader / Integrated Stiffener (IHS/IS) mounted to the substrate.....”

Claim 10 recites “An Integrated Heat Spreader / Integrated Stiffener (IHS/IS) mountable to one of a thin-core and coreless substrate...”

Claim 22 recites “A carrier package comprising: one of a thin-core and coreless substrate of an IC-PCB; and an IHS/IS mounted to said substrate ...”

Claim 38 recites “A packaged integrated circuit (IC) comprising: an IC-PCB carrier package including one of a thin-core and coreless substrate; and an IHS/IS ...”

Claim 51 recites “A heat spreader/stiffener device comprising a thermally conductive member having a side wall portion and a stiffener portion mountable to one of a thin-core and coreless substrate ...”

Claim 57 recites “An integrated circuit (IC) carrier package comprising... at least one of a thin-core and coreless substrate; and a heat spreader/stiffener device...”

Claim 66 recites “An electronic system comprising... at least one of a thin-core and coreless substrate; and a heat spreader/stiffener device ...”

Claim 70 recites “A package comprising...a heat spreader/stiffener device mounted to the one of the thin-core and the coreless substrate...”

The Office Action of March 22, 2004 noted both Chen and Dudderar fails to explicitly show one of a thin-core and coreless substrate. Instead, the Action looks to Greenwood and states on pages 6 and 8 of the Action: “...It would have been obvious to one skilled in the art to use Greenwood’s thin-core substrate to modify Chen’s (Dudderar et al.’s) substrate for the purpose of providing a package where reliability can be determined.”

However, the Action does not disclose motivation or suggestion in Chen or Dudderar et al. to look to Greenwood to modify either Chen or Dudderar et al. to form what is claimed, in particular one of a thin-core and coreless substrate. Because neither the suggestion to make the claimed combination, nor the reasonable expectation of success thereof, was stated in the Action to be found in Chen or Dudderar, the Action did not establish a *prima facie* case of obviousness. Accordingly, the Action relies on impermissible hindsight to make the combination of

references. Applicants respectfully submit that the Office Action has not provided evidence from Chen or Duddedar for a suggestion or motivation to combine the references.

Further, in regard to originally presented claim 2, the Office Action of October 6, 2003 noted that Forthun et al. fails to explicitly show one of a thin-core and coreless substrate. Instead, this Action also looks to Greenwood and states on page 5 of this Action: "...It would have been obvious to one skilled in the art to use Greenwood's thin-core substrate to modify Forthun et al.'s substrate for the purpose of providing a package where reliability can be determined."

However, the Action does not disclose motivation or suggestion in Forthun et al. to look to Greenwood to modify either Forthun et al. to form what is claimed, in particular one of a thin-core and coreless substrate. Because neither the suggestion to make the claimed combination, nor the reasonable expectation of success thereof, was stated in the Action to be found in Forthun et al., the Action did not establish a *prima facie* case of obviousness. Accordingly, the Action relies on impermissible hindsight to make the combination of references. Applicants respectfully submit that the Office Action has not provided evidence from Forthun et al. for a suggestion or motivation to combine the references.

Applicants do not admit that Forthun et al. is prior art, and reserve the right to swear behind Forthun et al. at a later date. Nevertheless, Applicants respectfully submit that the claims are distinguishable over Forthun et al. for the reasons argued herein.

Accordingly, Applicants submit that claims 2, 10, 22, 38, 51, 57, 66 and 70 are patentable.

Because claims 3-9, 11-16, 19-21, 23-32, 35-37, 39-48, 52-54, 56, 58-60, 62-65, 67-69, 71-76 depend from either claims 2, 10, 22, 38, 51, 57, 66 or 70, and contain additional limitations that are patentably distinguishable over Duddedar et al. and Greenwood, Chen and Greenwood, and Forthun et al. and Greenwood, these dependent claims are also considered to be patentable over Duddedar et al. and Greenwood, Chen and Greenwood, and Forthun et al. and Greenwood.

Conclusion

Applicants respectfully submit that the claims are in condition for allowance and notification to that effect is earnestly requested. The Examiner is invited to telephone Applicants' attorney, Lucinda Price at (352) 373-8804, or Applicants' below-named representative at (612) 349-9592 to facilitate prosecution of this application.

If necessary, please charge any additional fees or credit overpayment to Deposit Account No. 19-0743.

Respectfully submitted,

HONG XIE ET AL.

By their Representatives,

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Date May 28, 2004

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CERTIFICATE UNDER 37 CFR 1.8: The undersigned hereby certifies that this correspondence is being deposited with the United States Postal Service with sufficient postage as first class mail, in an envelope addressed to: MS Amendment, Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450, on this 28 day of May 2004.

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